

10/501223

DT04 Rec'd PCT/PTO 12 JUL 2004

1

## SEQUENCE LISTING

&lt;110&gt; BIOMERIEUX SA

&lt;120&gt; HIV-1 VIRUS TAT PROTEIN MUTANTS

&lt;130&gt; IFB 01 CE BIO MTAT

&lt;140&gt; PCT/FR03/00051

&lt;141&gt; 2003-01-09

&lt;150&gt; FR 02/00319

&lt;151&gt; 2002-01-11

&lt;160&gt; 108

&lt;170&gt; PatentIn version 3.1

&lt;210&gt; 1

&lt;211&gt; 101

&lt;212&gt; PRT

&lt;213&gt; HIV-1 virus

&lt;400&gt; 1

Met	Glu	Pro	Val	Asp	Pro	Lys	Leu	Glu	Pro	Trp	Lys	His	Pro	Gly	Ser
1				5					10					15	

Gln	Pro	Lys	Thr	Ala	Cys	Asn	Asn	Cys	Tyr	Cys	Lys	Lys	Cys	Cys	Phe
			20					25					30		

His	Cys	Gln	Val	Cys	Phe	Thr	Lys	Lys	Gly	Leu	Gly	Ile	Ser	Tyr	Gly
	35						40					45			

Arg	Lys	Lys	Arg	Arg	Gln	Arg	Arg	Arg	Ser	Pro	Gln	Asp	Ser	Glu	Thr
	50				55						60				

His	Gln	Val	Ser	Leu	Ser	Lys	Gln	Pro	Ala	Ser	Gln	Pro	Arg	Gly	Asp
65					70					75					80

Pro	Thr	Gly	Pro	Lys	Glu	Ser	Lys	Lys	Lys	Val	Glu	Arg	Glu	Thr	Glu
				85					90					95	

Thr	Asp	Pro	Val	Asp
				100

&lt;210&gt; 2

&lt;211&gt; 101

&lt;212&gt; PRT

&lt;213&gt; artificial sequence

&lt;220&gt;

&lt;223&gt; K51T-R52L mutant of Tat protein

&lt;400&gt; 2

Met	Glu	Pro	Val	Asp	Pro	Lys	Leu	Glu	Pro	Trp	Lys	His	Pro	Gly	Ser
1				5					10					15	

Gln	Pro	Lys	Thr	Ala	Cys	Asn	Asn	Cys	Tyr	Cys	Lys	Lys	Cys	Cys	Phe
			20					25					30		

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 3  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> K51T-R55L mutant of Tat protein

<400> 3  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 4  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> K51T-R57L mutant of Tat protein

<400> 4  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 5  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> K51T-G79A mutant of Tat protein

<400> 5  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 6  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> K51T-K89L mutant of Tat protein

<400> 6  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
35 40 45

Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
85 90 95

Thr Asp Pro Val Asp  
100

<210> 7

<211> 101

<212> PRT

<213> artificial sequence

<220>

<223> K51T-E92Q mutant of Tat protein

<400> 7

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
35 40 45

Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
85 90 95

Thr Asp Pro Val Asp  
100

<210> 8

<211> 101

<212> PRT

<213> artificial sequence

<220>

<223> R52L-R55L mutant of Tat protein

<400> 8

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
                   20                  25                  30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
           35                  40                  45  
 Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
       50                  55                  60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65                  70                  75                  80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
                   85                  90                  95  
 Thr Asp Pro Val Asp  
           100

<210> 9  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> R52L-R57L mutant of Tat protein

<400> 9  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1                  5                  10                  15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
           20                  25                  30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
           35                  40                  45  
 Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
       50                  55                  60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65                  70                  75                  80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
                   85                  90                  95  
 Thr Asp Pro Val Asp  
           100

<210> 10  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> R52L-G79A mutant of Tat protein

&lt;400&gt; 10

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

&lt;210&gt; 11

&lt;211&gt; 101

&lt;212&gt; PRT

&lt;213&gt; artificial sequence

&lt;220&gt;

&lt;223&gt; R52L-K89L mutant of Tat protein

&lt;400&gt; 11

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

&lt;210&gt; 12

&lt;211&gt; 101

&lt;212&gt; PRT

&lt;213&gt; artificial sequence

&lt;220&gt;

&lt;223&gt; R52L-E92Q mutant of Tat protein

&lt;400&gt; 12

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

&lt;210&gt; 13

&lt;211&gt; 101

&lt;212&gt; PRT

&lt;213&gt; artificial sequence

&lt;220&gt;

&lt;223&gt; R55L-R57L mutant of Tat protein

&lt;400&gt; 13

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

&lt;210&gt; 14

&lt;211&gt; 101

&lt;212&gt; PRT

&lt;213&gt; artificial sequence

&lt;220&gt;

&lt;223&gt; R55L-G79A mutant of Tat protein

&lt;400&gt; 14

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

&lt;210&gt; 15

&lt;211&gt; 101

&lt;212&gt; PRT

&lt;213&gt; artificial sequence

&lt;220&gt;

&lt;223&gt; R55L-K89L mutant of Tat protein

&lt;400&gt; 15

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

&lt;210&gt; 16

&lt;211&gt; 101

&lt;212&gt; PRT

&lt;213&gt; artificial sequence



&lt;220&gt;

&lt;223&gt; R55L-E92Q mutant of Tat protein

&lt;400&gt; 16

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

&lt;210&gt; 17

&lt;211&gt; 101

&lt;212&gt; PRT

&lt;213&gt; artificial sequence

&lt;220&gt;

&lt;223&gt; R57L-G79A mutant of Tat protein

&lt;400&gt; 17

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 18  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> R57L-K89L mutant of Tat protein

<400> 18  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 19  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> R57L-E92Q mutant of Tat protein

<400> 19  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 20  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> G79A-K89L mutant of Tat protein

<400> 20

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Lys Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

```

<210> 21  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> G79A-E92Q mutant of Tat protein

<400> 21

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Lys Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

```

<210> 22  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> K89L-E92Q mutant of Tat protein

<400> 22  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Cys Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 23  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-K51T-R52L mutant of Tat protein

<400> 23  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 24  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-K51T-R55L mutant of Tat protein

<400> 24  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 25  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-K51T-R57L mutant of Tat protein

<400> 25  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 26  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-K51T-G79A mutant of Tat protein

<400> 26  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 27  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-K51T-K89L mutant of Tat protein

<400> 27  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 28  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-E92Q mutant of Tat protein

<400> 28

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

```

<210> 29  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R52L-R55L mutant of Tat protein

<400> 29

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

```

<210> 30  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R52L-R57L mutant of Tat protein

<400> 30  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 31  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R52L-G79A mutant of Tat protein

<400> 31  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100



<210> 32  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R52L-K89L mutant of Tat protein

<400> 32  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 33  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R52L-E92Q mutant of Tat protein

<400> 33  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 34  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R55L-R57L mutant of Tat protein

<400> 34

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 35  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R55L-G79A mutant of Tat protein

<400> 35

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 36  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R55L-K89L mutant of Tat protein

<400> 36  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 37  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R55L-E92Q mutant of Tat protein

<400> 37  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 38  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R57L-G79A mutant of Tat protein

<400> 38

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 39  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R57L-K89L mutant of Tat protein

<400> 39

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 40  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R57L-E92Q mutant of Tat protein

<400> 40  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 41  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-G79A-K89L mutant of Tat protein

<400> 41  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 42  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-G79A-E92Q mutant of Tat protein

<400> 42

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Lys Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 43  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K89L-E92Q mutant of Tat protein

<400> 43

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Lys Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 44  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-G79A mutant of Tat protein

<400> 44

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

```

<210> 45  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-K89L mutant of Tat protein

<400> 45

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

```

<210> 46  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-K51T-R52L-E92Q mutant of Tat protein

<400> 46  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 47  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-K51T-R55L-G79A mutant of Tat protein

<400> 47  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100



<210> 48  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-K51T-R55L-K89L mutant of Tat protein

<400> 48  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 49  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-K51T-R55L-E92Q mutant of Tat protein

<400> 49  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 50  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R57L-G79A mutant of Tat protein

<400> 50

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 51  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R57L-K89L mutant of Tat protein

<400> 51

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 52  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-K51T-R57L-E92Q mutant of Tat protein

<400> 52  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 53  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-K51T-G79A-K89L mutant of Tat protein

<400> 53  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 54  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-G79A-E92Q mutant of Tat protein

<400> 54

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 55  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-K89L-E92Q mutant of Tat protein

<400> 55

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 56  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R52L-G79A-K89L mutant of Tat protein

<400> 56  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 57  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R52L-G79A-E92Q mutant of Tat protein

<400> 57  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 58  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R52L-K89L-E92Q mutant of Tat protein

<400> 58

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 59  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R52L-R55L-G79A mutant of Tat protein

<400> 59

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 60  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R52L-R55L-K89L mutant of Tat protein

<400> 60  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 61  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R52L-R55L-E92Q mutant of Tat protein

<400> 61  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 62  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R52L-R57L-G79A mutant of Tat protein

<400> 62  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 63  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R52L-R57L-K89L mutant of Tat protein

<400> 63  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100



<210> 64  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R52L-R57L-E92Q mutant of Tat protein

<400> 64

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

```

<210> 65  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R55L-G79A-K89L mutant of Tat protein

<400> 65

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

```

<210> 66  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R55L-G79A-E92Q mutant of Tat protein

<400> 66  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 67  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R55L-K89L-E92Q mutant of Tat protein

<400> 67  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 68  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R55L-R57L-G79A mutant of Tat protein

<400> 68  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 69  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R55L-R57L-K89L mutant of Tat protein

<400> 69  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 70  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R55L-R57L-E92Q mutant of Tat protein

<400> 70  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 71  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R57L-G79A-K89L mutant of Tat protein

<400> 71  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 72  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R57L-G79A-E92Q mutant of Tat protein

<400> 72

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 73  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R57L-K89L-E92Q mutant of Tat protein

<400> 73

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 74  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-G79A-K89L-E92Q mutant of Tat protein

<400> 74  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 75  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-K51T-G79A-K89L-E92Q mutant of Tat protein

<400> 75  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Arg Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 76  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-R55L-G79A mutant of Tat protein

<400> 76

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Thr Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 77  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-R55L-K89L mutant of Tat protein

<400> 77

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Thr Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 78  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-R55L-E92Q mutant of Tat protein

<400> 78

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Thr Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
          65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

```

<210> 79  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-R57L-G79A mutant of Tat protein

<400> 79

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Thr Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
          65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

```



<210> 80  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-R57L-K89L mutant of Tat protein

<400> 80

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Thr Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 81  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-R57L-E92Q mutant of Tat protein

<400> 81

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Thr Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 82  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-G79A-K89L mutant of Tat protein

<400> 82

```
Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100
```

<210> 83  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-G79A-E92Q mutant of Tat protein

<400> 83

```
Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100
```

<210> 84  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R52L-K89L-E92Q mutant of Tat protein

<400> 84

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Thr Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 85  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R55L-R57L-G79A mutant of Tat protein

<400> 85

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Thr Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 86  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R55L-R57L-K89L mutant of Tat protein

<400> 86

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Thr Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 87  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R55L-R57L-E92Q mutant of Tat protein

<400> 87

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Thr Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 88  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R55L-G79A-K89L mutant of Tat protein

<400> 88

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 89  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R55L-G79A-E92Q mutant of Tat protein

<400> 89

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 90  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R55L-K89L-E92Q mutant of Tat protein

<400> 90

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Thr Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
          65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

```

<210> 91  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R57L-G79A-K89L mutant of Tat protein

<400> 91

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1           5           10           15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20           25           30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35           40           45

Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50           55           60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
          65           70           75           80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85           90           95

Thr Asp Pro Val Asp
          100

```

<210> 92  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R57L-G79A-E92Q mutant of Tat protein

<400> 92

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 93  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-K51T-R57L-K89L-E92Q mutant of Tat protein

<400> 93

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Thr Arg Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 94  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R52L-R55L-R57L-G79A mutant of Tat protein

<400> 94

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Lys Leu Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Glu Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 95  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R52L-R55L-R57L-K89L mutant of Tat protein

<400> 95

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Lys Leu Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100



<210> 96  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R52L-R55L-R57L-E92Q mutant of Tat protein

<400> 96

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Leu Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 97  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R52L-R55L-G79A-K89L mutant of Tat protein

<400> 97

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 98  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R52L-R55L-G79A-E92Q mutant of Tat protein

<400> 98

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 99  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R52L-R55L-K89L-E92Q mutant of Tat protein

<400> 99

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Leu Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 100  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R52L-R57L-G79A-K89L mutant of Tat protein

<400> 100

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 101  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R52L-R57L-G79A-E92Q mutant of Tat protein

<400> 101

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 102  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R52L-R57L-K89L-E92Q mutant of Tat protein

<400> 102

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Lys Leu Arg Gln Arg Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 103  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R52L-G79A-K89L-E92Q mutant of Tat protein

<400> 103

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45

Arg Lys Lys Leu Arg Gln Arg Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu  
 85 90 95

Thr Asp Pro Val Asp  
 100

<210> 104  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R55L-R57L-G79A-K89L mutant of Tat protein

<400> 104

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Glu Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 105  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>

<223> C27S-R55L-R57L-G79A-E92Q mutant of Tat protein

<400> 105

```

Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser
1          5          10          15

Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe
          20          25          30

His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly
          35          40          45

Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr
          50          55          60

His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp
65          70          75          80

Pro Thr Gly Pro Lys Glu Ser Lys Lys Lys Val Gln Arg Glu Thr Glu
          85          90          95

Thr Asp Pro Val Asp
          100

```

<210> 106  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R55L-R57L-K89L-E92Q mutant of Tat protein

<400> 106  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Leu Arg Leu Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Gly Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

<210> 107  
 <211> 101  
 <212> PRT  
 <213> artificial sequence

<220>  
 <223> C27S-R55L-G79A-K89L-E92Q mutant of Tat protein

<400> 107  
 Met Glu Pro Val Asp Pro Lys Leu Glu Pro Trp Lys His Pro Gly Ser  
 1 5 10 15  
 Gln Pro Lys Thr Ala Cys Asn Asn Cys Tyr Ser Lys Lys Cys Cys Phe  
 20 25 30  
 His Cys Gln Val Cys Phe Thr Lys Lys Gly Leu Gly Ile Ser Tyr Gly  
 35 40 45  
 Arg Lys Lys Arg Arg Gln Leu Arg Arg Ser Pro Gln Asp Ser Glu Thr  
 50 55 60  
 His Gln Val Ser Leu Ser Lys Gln Pro Ala Ser Gln Pro Arg Ala Asp  
 65 70 75 80  
 Pro Thr Gly Pro Lys Glu Ser Lys Leu Lys Val Gln Arg Glu Thr Glu  
 85 90 95  
 Thr Asp Pro Val Asp  
 100

$\langle 220 \rangle$ 

<400> 108

Thr Asp Pro Val Asp  
100